

## Section of the History of Medicine

President W Hartston FRCP

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### Paper

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#### The Development of Pathology in the RAMC

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From the sick ward and the operating theatre  
The RAMC passed into the Laboratory,  
Where it has made notable contributions to the  
Welfare of Mankind

Peter Lovegrove: Not Least in the Crusade (1951)

I should like to make clear at the outset that what is stated hereunder is a purely personal account, my own point of view of this subject.

Pathology in the army has still got that connotation (Laboratory Medicine) of a mother-figure, perhaps father-figure would be a better phrase in this army context, embracing all the splinter groups into which it is now the fashion to subdivide it – in other words the army expects its pathologists to be all things to all men.

As the embryo army pathologist passes through his larval stages his training is supervised, his apparatus is financed and he is given statistical support by various combined army-civilian institutions, both ancient and modern.

It is worth noting that since 1964 the Professor of Pathology at the Royal Army Medical College is also ex-officio Professor of Military Pathology at the Royal College of Pathologists; thus army pathology and civilian pathology do not get divorced. More important to my mind is the requirement of the Diploma in Tropical Medicine and Hygiene for the consultant army pathologist; this ensures that the lessons learned by our predecessors in many a foreign field are not forgotten lest our services are called upon and we are found wanting.

The Army Laboratory Technician is also expected to be able to hew down any kind of tree and to draw up any kind of water – to this

end full facilities are given for him (there are no female laboratory technicians in the army pathology department) to acquire civilian registrable qualifications. A representative of the Institute of Medical Laboratory Technology sits on the army examination board. I may add that since 1966 an army laboratory technician can attain commissioned rank in laboratory technology.

#### *The Living Present*

The RAMC celebrated its 75th anniversary last year, and I completed more than 25 years of army service, so that my army service spans about one-third of RAMC pathology – a sobering thought.

During this period the development of RAMC pathology has been in the hands of 7 wise men:

*John Smith Knox Boyd (1945–6)*: When I joined the service, Sir John Boyd left it! His influence on pathology, both army and civil, has been very impressive, so I shall just take one facet of this many-splendoured man. Dysentery has always plagued soldiering since armies took the field and Sir John created order out of chaos – his name will be forever commemorated in the group of dysentery organisms known as *Shigella boydii*.

*Harry Taylor Findlay (1946–9)*: In my mind I always associate Findlay with the trio of army pathologists Perry, Findlay and Bensted who in the 1930s gave the kiss of life to the army typhoid vaccine. They found that the Rawlings strain of typhoid bacillus in use by the army since the early 1900s had become weaker and weaker by repeated subcultures and the army vaccine had become consequently less and less effective. These three army pathologists rejuvenated this bacillus and thereby prepared the way for the discovery of the Vi antigen by Arthur Felix and Margaret Pitt.

*Albert Sachs (1949–53)*: Some serotypes of dysentery organisms are associated with the name

of Sachs. I am informed by Albert Sachs that it was Manifold who gave the non-mannite fermenters to Sachs and the mannite-fermenters to Boyd for them to research upon – thus the RAMC pathologists covered the whole field. According to the gospel of Sir John the Pathology Department of the RAMC owes a great debt to Manifold who organized pathology teaching programmes, parts of which may still be in use today. John Alexander Manifold belongs to that interesting period in our history when a man could be a specialist in army hygiene as well as a pathologist, and Manifold was both, and indeed ended his service in World War II as Director of Army Hygiene at War Office.

*Gilbert Thomas Lancelot Archer* (1953–61): When I caught up with Archer he was busy titrating antibodies (now called immunoglobulins) in the urine of typhoid carriers in Fayid, on the Suez Canal, then the Headquarters of the Middle East Land Forces; with the modern explosion of immunology I am sure someone somewhere is repeating this work without knowing that it has been all done before.

*Lennox Ross Selby Macfarlane* (1961–4) who, died two Christmases ago, taught me haematology and parasitology and indeed he was the author of a book on this latter subject.

*Matthew Herbert Patrick Sayers* (1964–7): This army pathologist, together with the RAF pathologist William Percivale Stamm and Mollie Barr from the Wellcome Research Laboratories, introduced into this country the practice of intradermal (typhoid) vaccination, a less painful method of vaccine administration than the more familiar subcutaneous and intramuscular routes.

*Hugh Crozier Jeffrey* (1967–74): And then there was one – Hugh Jeffrey; to my mind a histologist without a peer in this country, he established a record for the highest number of marks ever awarded to a (pathologist) candidate at the MRCP examinations in Edinburgh. However, like other army pathologists, a man of many parts, Jeffrey has recently written a review article on sarcosporidiosis of which only 16 cases have been recorded in medical literature, including one case reported by him, one by Alexander Morrison Pugh, and a third one by the aforementioned Manifold – three out of 16 cases; not a bad bag for army pathology.

At the end of World War II two army medical officers were selected and sent to the USA for postgraduate studies – one of them was the pathologist Major Hugh Jeffrey; ever since then an army pathologist has been sent to the Walter Reed Medical Complex in Washington, which includes the internationally famous Armed Forces Institute of Pathology, and we get in

return a US army pathologist – this is an exchange programme which works very well.

### *The Golden Era*

On 23 June 1898 at Windsor Castle Queen Victoria in the sixtieth year of her reign signed the warrant for the foundation of the RAMC. At that time the Army Medical School was attached to the Royal Victoria Hospital at Netley, near Southampton, and the Professor of Pathology was a civilian, Almroth E Wright, who apropos his appointment stated 'this was the best stroke of luck that man ever had'! He certainly set army pathology on fire. I will just take one aspect of the work of this remarkable man, namely that in connexion with vaccines, for as he used to say: 'the Physician of the Future will be an Immunizer'. Ever since Wright's days the Army Pathology Department has kept in the forefront of vaccine manufacture, his mantle having fallen successively on Semple, Leishman, Perry, Findlay, Bensted, Harvey, Sir John Boyd, Pat Sayers, and John Noble and Eric Clifford in our days.

As assistant professor to Wright was David Bruce, in whom I have vested interest having recently written a biographical essay on Bruce; so I will just mention that on his way from Malta (and his epoch-making discovery of the *Micrococcus melitensis*) he went to Koch's Institute in Berlin, and on his arrival at Netley he is credited with having organized the first systematic course in bacteriology in any medical school in this country.

David Semple succeeded Bruce – on his grand tour, instead of going to the German School, Semple chose to go to the rival French School – namely the Pasteur Institute in Paris. On his posting to India Major David Semple founded the Pasteur Institute at Kasauli; this was the first Pasteur Institute in the British Empire. Here he began to produce vaccines, including one against rabies – the Semple type of rabies vaccine is still in use today. At that time this was a very great boon, when one remembers that in those days if some unfortunate soldier got bitten by a rabid animal he had to be transported all the way to Paris for treatment, and great must have been the mental anguish of the miserable patient with visions of a horrible death stalking his every footstep.

Following Semple as assistant professor came William Boog Leishman, well known in army circles as the eccentric officer who took a microscope with him on his posting to India! Leishman is one of our RAMC Greats; his name is associated with the stain (Leishman's stain), the parasite (*Leishmania donovani*) and the disease (Leishmaniasis). He established a number of firsts – he was the first Director of Pathology at

War Office, the first pathologist to become Director-General of the Army Medical Services, the first 'soldier' pathologist to become professor as his predecessors were civilians, and he was the first professor to take the chair at the Royal Army Medical College, Millbank, London, the direct descendant of the Netley Army Medical School.

### *Civilians in Uniform*

'A tribute to a Few of the Many to whom Army Pathology owes so much' (Vella 1974).

In the period between the South African War and the 1914–19 War the potentiality of pathology was not fully realized; courses were held in the Royal Army Medical College at Millbank for junior and senior officers at which instruction in this subject was given, and some officers were then selected and given a further three months' course in bacteriology, but this cadre was not enough and it is greatly to the credit of our civilian confreres that many a head of a pathology department came to our help, in many instances followed by most members of his staff (Table 1).

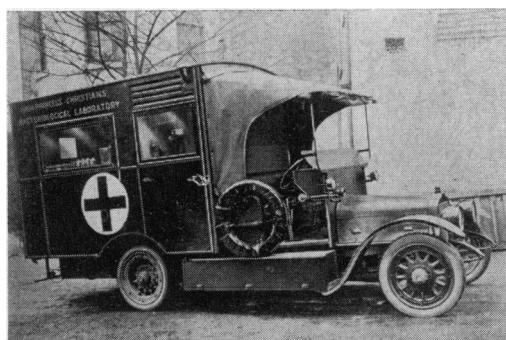
*Table 1*

Civilians in uniform 1914–18

<i>Name</i>	<i>War work</i>
F W Andrewes	Tetanus, bacillary dysentery
Andrew Balfour	Typhus
J S Dunn	War nephritis
Alexander Fleming	Wounds
Mervyn Gordon	Cerebrospinal fever
J C Ledingham	Enteritis
J W McNee	Trench fever
Adrian Stokes	Leptospirosis
Sims Woodhead	Inspector of Laboratories
Sir Almroth Wright	War Office medical intelligence and investigation department

They manned Army Hospital Laboratories – there is nothing much to be said about that, but for the first time in the history of warfare the need for medical research was realized and Research Laboratories were created such as, for example, the Cerebrospinal Fever Research Laboratory at the RAM College run by Lieutenant Colonel Mervyn Gordon – at this time this country was in the grip of an epidemic of meningitis on an unprecedented scale. To Boulogne, in Northern France, came Wright, now Sir Almroth E Wright, thinly disguised as Colonel RAMC, and to him flocked the Wright men such as Freeman, Leonard Colebrook and Alexander Fleming – here was done much research on war wounds.

Furthermore another innovation in World War I was the laboratory on wheels (Fig 1). With in a month of the British Expeditionary Force



*Fig 1 The second laboratory on wheels, World War I: The Princess Christian's Bacteriological Laboratory*

landing in France an SOS was sent to War Office requesting a mobile laboratory. The Lister Institute secured a luxury caravan and refurnished it as a laboratory; and one of the members of its staff, Major Sydney Donville Rowland took this mobile laboratory to France; unfortunately he died from cerebrospinal meningitis while investigating carriers of this disease. Another famous name associated with this first mobile laboratory was Major Adrian Stokes who was so touched by the agonies of our soldiers dying from tetanus that he could be seen in his motorcycle combination going the rounds of the field dressing stations giving ATS (antitetanus serum) to wounded personnel, thus saving many lives and relieving much suffering.

RAMC acknowledges immense services of eminent civilian reinforcements.  
Finest scientific brains (Winston Churchill 1920)

In a like manner we owe an equal debt to our civilian colleagues who came in during World War II: E S Anderson, R Blowers, G A H Buttle, S D S Cameron, Leonard Colebrook, R W Fairbrother, A E Francis, J W Howie, W Hayes, H Magnus, R G Macfarlane, B G Maegraith, F V MacCallum, G Montgomery, Janet Niven, R J Pulvertaft, E T C Spooner, H Spencer and Van der Ende. It is true that when this war broke out we had an organized department of army pathology at War Office with a Director of Pathology, and we had Deputy and Assistant Deputy Directors all over our far-flung empire; but in a total war such as this, these were not enough.

The Director-General accordingly made his demands known to the Central War Medical Committee of the British Medical Association, which passed it over in turn to the Medical Research Council who had a prepared list of pathologists (and also laboratory technicians). These came in the service as (full) specialists, and

were granted the rank of Major and given extra 'specialist' pay; however, their numbers were not enough and so fully trained but less experienced men were called in – the graded specialists who were supposed to work under the supervision of the specialist, but again their numbers proved insufficient to the great needs of the moment and so the General Duty Medical Officer Trainee in Pathology scheme was evolved (I remember this ploy quite well as this is how I started my career in army pathology). This excellent scheme whereby suitable candidate Medical Officers were trained in Central Pathology Laboratory (a new institution brought out in this War) proved very successful and kept morale high.

Some of the personalities who served in this war, to mention only a few, were Sir Charles Stuart-Harris, the present Dean of Medicine at Sheffield, who established a Typhus Research Laboratory at Algiers; Professor Harold Leeming Sheehan (Liverpool) (Fig 2) who worked on syringe-transmitted hepatitis, now known as HB Ag or Australia Antigen; Professor C E van Rooyen (Toronto via Edinburgh) (Fig 3), who isolated a polio virus in Cairo which was taken over and incorporated by Dr Sabin as the Polio Type II component (MEF) in his oral polio vaccine.

It is interesting to note that van Rooyen has kept his ties with the forces as he is the consultant microbiologist to the Canadian Forces, and so have Dr William d'Auvergne Maycock (Lister Institute) who is our Honorary Civilian Consultant in Blood Transfusion, Professor Brian



Fig 3 C E van Rooyen (Polio virus)

Westgarth Lacey (Westminster) our Consultant in Pathology, and the President of the Royal College of Pathologists Professor John Vivian Dacie (Hammersmith Hospital) who is our Consultant in Haematology.

Splendid support  
of civilian pathologists and bacteriologists  
Kept army pathology service  
At a very high level (Official History of World War II).



Fig 2 H L Sheehan (Hepatitis)

*Lady pathologists:* Up to the 1939–45 war no women had ever held a commission in HM Forces under the Army Act (except for our famous Inspector-General James Barry), but this was a total war and women doctors were needed. The remedy for this lay in the Defence (Women's Forces) Act of 1941 and the Women's Forces (Officers' Commissions) Order of 1941. If one takes a look at the appropriate Army List of this period one can see written at the top of one page the words in clear bold print 'Women Officers employed with the Royal Army Medical Corps' but please note not 'commissioned in'; no woman doctor was commissioned in the RAMC during that war. While working on this historical labour of love I chanced to observe the name of Mrs E Whitby, heading one such page right at the very top. The name switched on an alarm bell in the labyrinthine corridors of my brain – I pursued the matter further and uncovered the fact that Dr Ethel Whitby was posted for war duties at the newly established Army Blood Transfusion Service depot in Bristol.



Fig 4 Sir Lionel and Lady Whitby

She was in fact the wife of Colonel Sir Lionel Whitby – and what a chapter this officer wrote in the annals of the blood transfusion services not only of the Army but of his country as well (Fig 4). It is interesting to add that Lionel Whitby was a veteran of World War I.

Up to the moment of writing this essay I have not succeeded, despite a great deal of diligence and effort, in finding the date on which the first woman doctor was actually commissioned in the RAMC but I am pleased to state that the very first RAMC Regular Commission was granted in 1961 to my former colleague and friend Mary Monro (Fig 5) who by a coincidence ended her distinguished army career as Colonel, Officer Commanding, the Army Blood Supply Depot now established in Aldershot.

*The MRC:* The part played by the Medical Research Committee (later the Medical Research Council) in the war pathology of both wars cannot be over-emphasized, nor adequately



Fig 5 Colonel Mary M Monro – first lady officer to be granted a regular commission in the RAMC

treated in this paper. The MRC had a finger in every pathology pie, so I will take one aspect of its polydactylous activities – that of the Museum of War Pathology.

In World War I it was decided by the WO, the MRC, and the Royal College of Surgeons to start a collection of suitable specimens and material – under the supervision of Sir Arthur Keith, Professor S G Shattock and Mr C F Beadler. The MRC also provided the famous medical illustrator A K Maxwell. Unfortunately this collection which was housed at the Royal College of Surgeons in Lincoln's Inn Fields was totally destroyed in the London Air Blitz of 1941, so it was decided to start yet again another collection

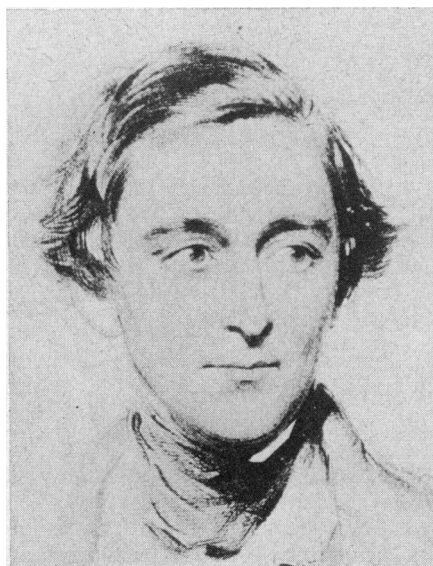


Fig 6 Sidney Herbert. Godfather of the Army Medical Services

characteristic of World War II (Dr Joan Ross and Sir Gordon Gordon-Taylor). Once again owing to various vicissitudes this second collection has also disappeared. The only things I have managed to see from the second collection of War Pathology are some breath-taking pioneer colour photographs of war injuries taken by P G Hennell (Metal Box Co) and a 'Belsen Heart' taken from some unfortunate inmate of that infamous concentration camp, while all that remains of the World War I collection are some marvellous coloured sketches done by Professor Henry Tonks FRCS, Slade Professor of Fine Art (London University) who had come forward to offer his professional services, illustrating the birth of plastic (maxillofacial) surgery – these magnificent and historic sketches are at present on loan and can be seen at the Depot of the Royal Army Dental Corps in Aldershot.

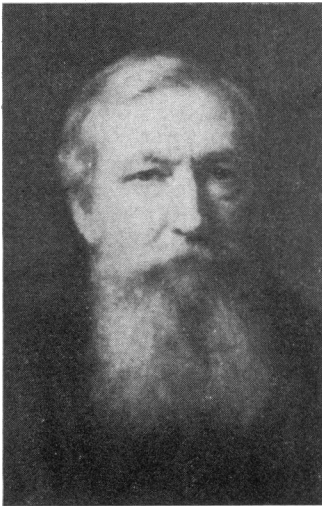


Fig 7 Sir William Aitken. Father of Army Pathology

I have deliberately selected this aspect of the MRC war activities because both Museums of War Pathology are now non-existent, and as an amateur army medical historian I feel a duty to record for posterity the fact and the memory of things no longer possible to trace.

He lives doubly  
Who also enjoys the past (Martial).

#### *Genesis*

In the beginning was the Crimea and God called forth William Howard Russell, a newspaperman who so stirred up the conscience of this nation that HM Government was forced to send Florence Nightingale to nurse in the Crimea, and in turn this determined young lady worked upon Sydney Herbert (Fig 6), a politician, so that the army finally was granted a Practical Army Medical School for the proper instruction of army medical officers.

The school was established at Fort Pitt, Chatham, an important garrison town, where there were many hospital beds and an invaliding depot for servicemen repatriated from overseas available for valuable clinical teaching; moreover the army medical officers had established there at their own expense a very fine library, and a museum of normal, comparative and morbid anatomy which, by the time the school opened its doors on 2 October 1860, housed about 14000 specimens, including 6000 pathology specimens, thus making Fort Pitt a valuable educational training centre.

Florence Nightingale must have met the three pathologists who were the members of a commission sent to the Crimea to investigate the

diseases of our armies in the East, for she nominated one of these pathologists, William Aitken (Fig 7), as the first Professor of Army Pathology, and there could not have been many professors of pathology at that time.

Sir William Aitken can thus be considered as the Father of Army Pathology; he was much respected and his opinion as consultant much sought. One of his books 'The Science and Practice of Medicine' ran into seven editions, and was a standard reference book for doctors in all English-speaking countries. When his health failed him his duties were often taken over by his assistant professor Major Timothy Richards Lewis, a distinguished pathologist who found the first nematode worm in the blood of man, *Filaria sanguinis-hominis nocturna lewisi*, and made many valuable original contributions to the pathology of tropical diseases. He was nominated for the Fellowship of the Royal Society but died just a few weeks before receiving that accolade of British sciences. Another of Aitken's assistant professors was Francis Henry Welch who was the first pathologist to prove that the chief cause of aneurysm was syphilis.

#### *Epilogue: Apologia Pro . . .*

'If the military efficiency of the country depends  
Upon the military training of the *civilian population*  
The *medical profession* is equally deeply concerned  
With *military medical problems*'

(Sir William Taylor 1904).

*Acknowledgments:* I confess that I have plagiarized widely from the writings of many dead men but the reader will bear with me, I trust – one cannot write history without first reading history.

I publicly apologize to and beg forgiveness from so many persons living both at home, and in places abroad such as Scotland and other foreign parts, for making myself a nuisance to them while researching this subject. It is my hope that I have failed neither the dead nor the living.

The following paper was also read:

#### **The History of Haemophilia**

Professor G I C Ingram

(Department of Haematology, St Thomas' Hospital and Medical School, London SE1 7EH)

Meeting 3 October 1973

Dr William Hartston (London) read his Presidential Address which was entitled **Three Centuries of English Poor Law Medicine.**